112 111 Host APP RM 130 102 SS 107 105 Take snapshot 108 <u>V</u> **X**OL (1) Start taking journal Management 101 106 table (MT) JNLG 140 Controller Storage System 100

Fig. 1 Overview of backup

Fig. 2 Control Data for Journal

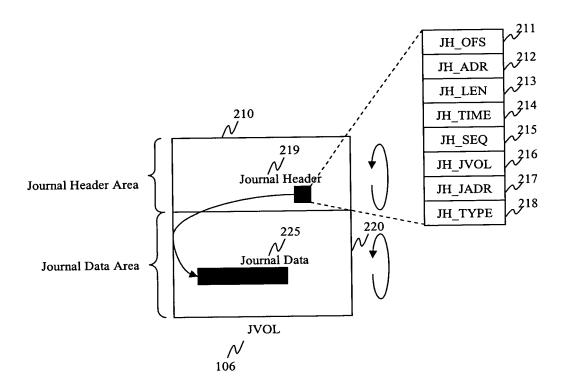
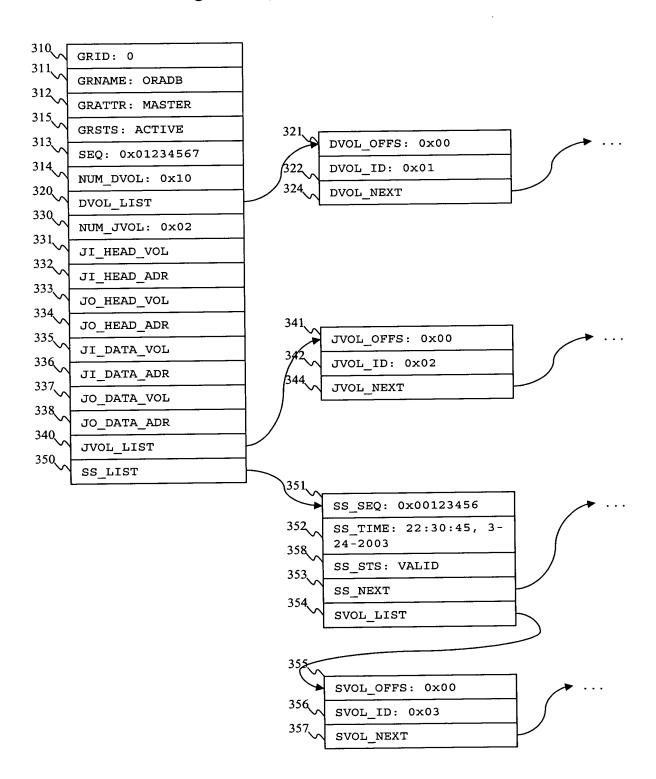


Fig. 3 MT(Management Table) 300



GRID: 0 DVOL OFFS: 0x00 GRNAME: ORADB DVOL_ID: 0x01 312 GRATTR: MASTER B24, DVOL NEXT 315 GRSTS: ACTIVE 313 SEQ: 0x01234567 314 331a NUM_DVOL: 0x10 JI_HEAD_VOL 320 DVOL_LIST 330 JI_HEAD_ADR 331c NUM_JVOLa: 0x02 JO_HEAD_VOL 331 331d JVOL_PTRa JO HEAD ADR 340 331e JVOL LISTa JI_DATA_VOL 331f NUM_JVOLb: 0x02 JI DATA ADR 333 331g JVOL_PTRb JO_DATA_VOL 341, 331h JVOL LISTb JO_DATA_ADR 350 SS_LIST JVOL OFFS: 0x00 340b JVOL_ID: 0x02 344 JVOL_NEXT 332a - 332h SS_SEQ: 0x00123456 352 SS_TIME: 22:30:45, 3-24-2003 341a - 341c 358 SS_STS: VALID SS NEXT SVOL LIST SVOL_OFFS: 0x00 356 SVOL ID: 0x03 357, SVOL_NEXT

Fig. 3A MT(Management Table) 300'

Fig. 4 Starting journal

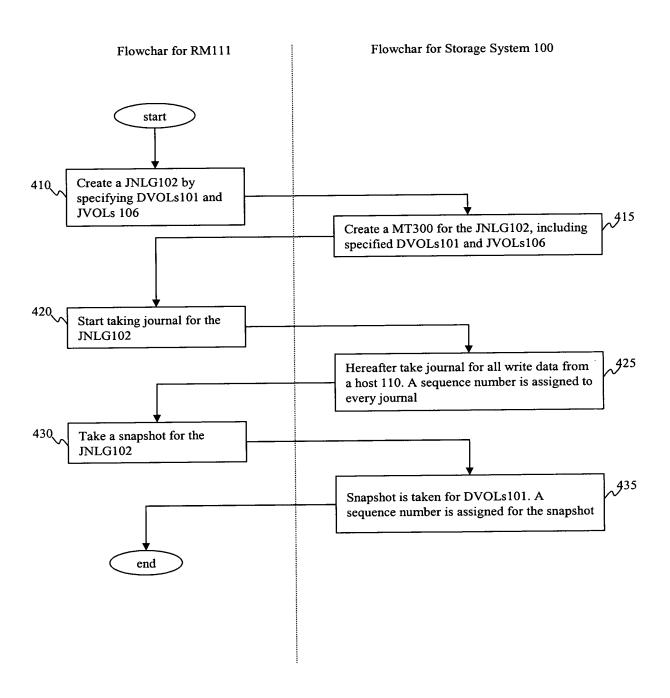


Fig. 5 Relationship between snapshot and journal

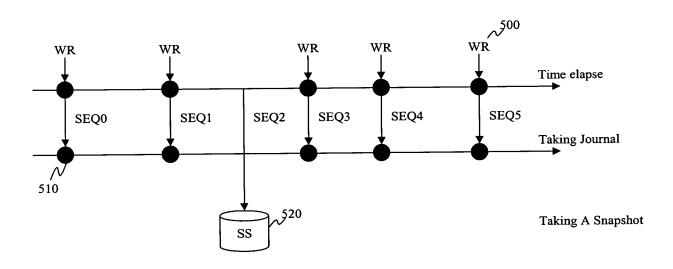
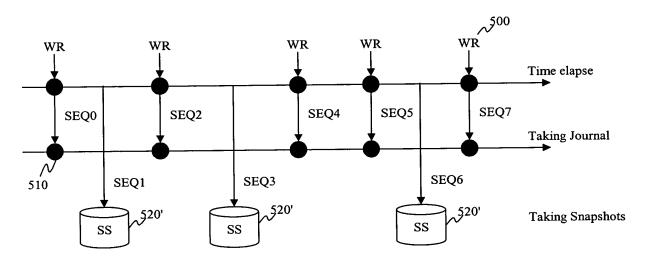


Fig. 5A Relationship between multiple snapshots and journal



110 112 Host APP RM130 V 105 107 Apply overflowing journal to SS 105 101 106 JNLG 108 102 Management table (MT) Controller

Storage System

/V 100

Fig. 6 Overflowing JNL

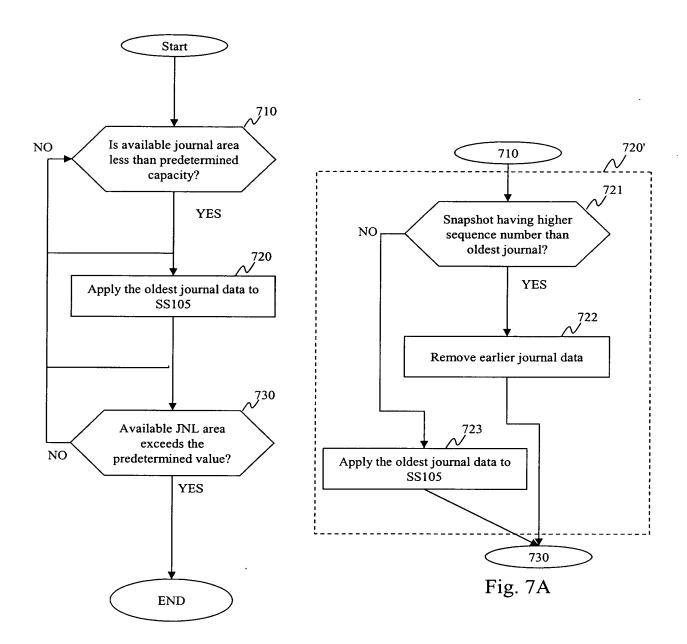


Fig. 7 Overflowing JNL

Fig. 8 Recovery procedure

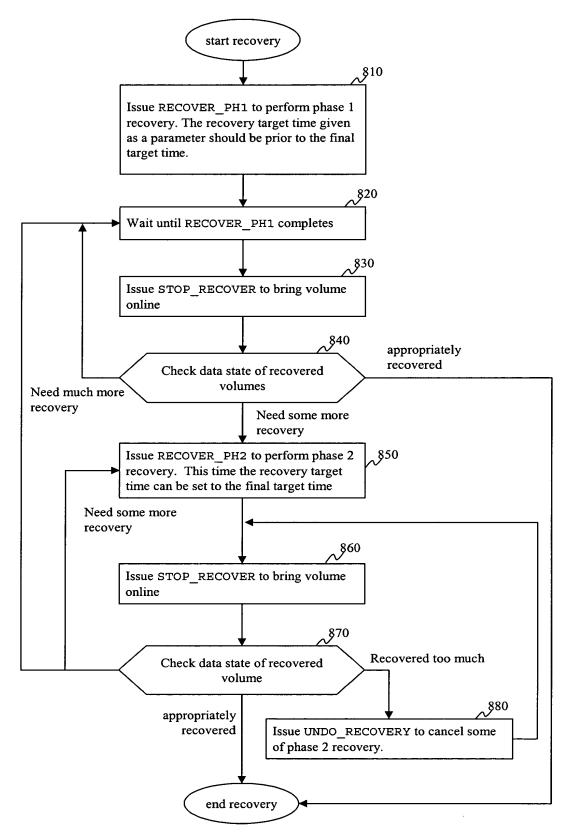


Fig. 9 Executing Phase1 Recovery

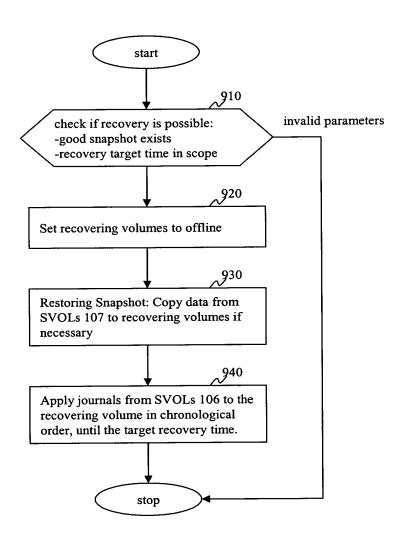


Fig. 10

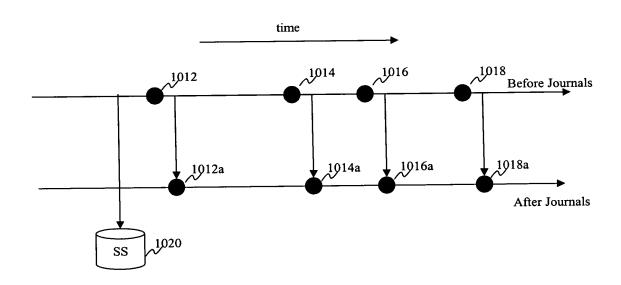


Fig. 11

